2. (Amended) The ultrasonic diagnostic imaging system of Claim 1, wherein said array transducer [means] for transmitting and [said means] for receiving comprises an ultrasonic transducer array probe.

A1 Cont. 3. (Amended) The ultrasonic diagnostic imaging system of Claim 2, wherein said ultrasonic transducer array probe comprises a plurality of transducer elements for transmitting ultrasonic energy at a fundamental frequency and for receiving ultrasonic echo signals at a harmonic of said fundamental frequency.

A2 5. (Amended) The ultrasonic diagnostic imaging system of Claim 1, wherein said circuit [means] for passing [receiving] ultrasonic echo signals at a harmonic of said fundamental frequency comprises a filter defining a passband which includes said harmonic frequency to the substantial exclusion of said fundamental frequency, including the substantial exclusion of multipath clutter at said fundamental frequency.

A3 7. (Amended) The ultrasonic diagnostic imaging system of Claim 1, wherein said [means for producing an ultrasonic] image processor includes a B mode processor which produces tissue harmonic images.

A4 9. (Amended) The ultrasonic diagnostic imaging system of Claim 1, wherein said tissue [structure] comprises naturally occurring tissue and cells [structure] of the body.

~~10.~~ 17 (Amended) The ultrasonic diagnostic imaging system of Claim ~~9~~ 16, wherein said tissue [naturally occurring structure] comprises tissue and cells of the body.

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~~11~~. (Amended) A method for producing an ultrasonic image from the harmonic response of tissue in the interior of the body comprising the steps of:

transmitting ultrasonic energy from the elements of an array transducer into the body at a fundamental frequency in wave components emanating over a plurality of elements in the near field and which wave components become focused to develop harmonic frequency components at a greater depth;

receiving ultrasonic echo signals by said array transducer which have been returned by said tissue at a harmonic of said fundamental frequency; [and]

forming coherent echo signals from said received ultrasonic echo signals;

passing tissue harmonic signals to the substantial exclusion of fundamental frequency signals; and

processing said tissue harmonic [echo] signals from which fundamental frequency signals have been substantially excluded to produce ultrasonic image display signals; and

displaying said ultrasonic image display signals,

whereby multipath clutter in said tissue harmonic ultrasonic image is substantially reduced.

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~~12~~. (Amended) The method of Claim ~~11~~, wherein the steps of transmitting and receiving comprise using an ultrasonic probe with a transducer array to transmit fundamental frequency ultrasonic energy and receive tissue harmonic echo signals.

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~~13~~. (Amended) The method of Claim ~~12~~, wherein the step of using an ultrasonic probe comprises the step of transmitting fundamental frequency ultrasonic energy and receiving tissue harmonic echo signals with the same transducer elements.

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~~14~~. (Amended) The method of Claim ~~11~~, wherein the step of passing tissue [receiving ultrasonic echo signals at a] harmonic signals [of said fundamental frequency] comprises filtering

[passing] received ultrasonic echo signals to pass [through a filter which passes] signals at said harmonic of said fundamental frequency to the substantial exclusion of said fundamental frequency, including the substantial exclusion of multipath clutter at said fundamental frequency.

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~~15.~~ (Amended) The method of Claim ~~11~~, wherein said processing step comprises B mode processing said tissue harmonic [echo] signals.

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~~16.~~ (Amended) The method of Claim ~~15~~, wherein said step of B mode processing includes the step of amplitude detecting said tissue harmonic [echo] signals.

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16 ~~15~~. (Amended) An ultrasonic diagnostic imaging system for imaging the harmonic response of tissue [structure] inside a body which exhibits depth dependent attenuation of ultrasonic energy, comprising:

a transmit controller operable to cause the elements of an array transducer to transmit wave components, the energy of which is distributed over the array in the near field and becomes focused to develop harmonic frequency components at a focal depth;

a transducer array [means] responsive to said transmit controller for transmitting ultrasonic energy into the body at a fundamental frequency which is equal to or less than 5 MHz and which is[;

means,] responsive to said transmitted ultrasonic energy[,] for receiving ultrasonic echo signals from tissue at a harmonic of said fundamental frequency which is equal to or less than 10 MHz; [and]

means for digitizing said received ultrasonic echo signals;

a digital beamformer for forming coherent echo signals from said digitized ultrasonic echo signals;

a filter which passes tissue harmonic echo signals to the substantial exclusion of fundamental frequency signals; and

an image processor, responsive to said tissue harmonic echo signals from which fundamental frequency signals have been substantially excluded, [means] for producing an ultrasonic image from said tissue harmonic echo signals,

whereby the multipath clutter of said image of tissue harmonic echo signals is substantially reduced.

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~~40.~~ (Amended) The ultrasonic diagnostic imaging system of Claim ~~39~~, 16 wherein said transducer array [transmitting means] transmits ultrasonic energy into the body at a fundamental frequency which is equal to or less than 2.5 MHz; and

wherein said transducer array [receiving means] receives ultrasonic echo signals from tissue at a harmonic of said fundamental frequency which is equal to or less than 5 MHz.

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~~41.~~ (Amended) The ultrasonic diagnostic imaging system of Claim ~~39~~, 16 wherein said transducer array [transmitting means] transmits ultrasonic energy into the body at a fundamental frequency which is less than 2 MHz; and

wherein said transducer array [receiving means] receives ultrasonic echo signals from tissue at a harmonic of said fundamental frequency which is less than 4 MHz.

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~~42.~~ (Amended) The ultrasonic diagnostic imaging system of Claim ~~39~~, 16 wherein said filter comprises [receiving means includes] a programmable digital filter which is programmed to pass a band of said tissue harmonic echo signals to the substantial exclusion of signals of said fundamental frequency, including the substantial exclusion of multipath clutter at said fundamental frequency.

REMARKS

Applicants' attorney would like to thank the Examiner for the courtesy of a telephonic interview conducted on August 24, 1998. In the course of that interview the claims remaining after